

Identification of Big Ideas

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I want to walk you through the thinking process involved in developing big ideas. I am going to use some of the big ideas teachers submitted in a methods class. I hope this process will help you develop and refine big ideas in the future.

When you are developing a lesson, you need to **begin with your state academic standards** or, if your district or school has one, your district or school curriculum. If you will be using a locally developed curriculum, you may want to make sure that the curriculum has been developed around your state standards. As a public school teacher, your state academic standards outline what you are required to teach. And it is worth mentioning here that a text book or science program is not a curriculum. A text book or packaged program is a **resource** for teaching either state standards or a local curriculum, but does not define the curriculum.

Example number 1

Let's look at one big idea that was submitted in DC and think about it in relation to state standards:

The life cycle of birds. (2nd grade)

The first question you want to ask is, "Do my state standards mention learning about the life cycle of birds in second grade?" State academic standards are not usually so specific. They usually point to more general knowledge, like "Describe simple life cycles of plants and animals and the similarities and differences in their offspring." (This example was taken from the Illinois State Academic Standards.)

So, in looking at our state standards, the big idea must be reworked to focus on *Life cycles*

Once you have made sure you are focusing on your state standards, you need to think about creating a big idea. Big ideas, or essential understandings, outline what you want all students to know and understand when they complete the lesson cycle. **Big ideas must be able to complete the sentence, "I want my students to understand that..."**

As you can see, "I want my student to understand that *life cycles*" is not a complete sentence. As teachers we need to ask ourselves, "Well, what do we want our students to understand about life cycles?" If we ask ourselves this, we come up with,

I want my students to understand that all living things have a life cycle.

This is a unit for second grade and so this is an appropriate big idea. If this were a unit being taught in kindergarten or first grade, this big idea may be smaller: "All animals have a life cycle."

The next question we ask is, "Is this a big idea or a detail?" To check if it is a big idea or detail, we see if we can give an example. **I want my students to understand that all living things have a life cycle. For example, a bird begins life as an egg, then becomes a chick, then grows into a bird, and then lays an egg to begin the cycle again.** If you can give several examples of the big idea, it is indeed a big idea and not a detail.

When we teach big ideas, we want to make sure to have students study several examples of the big idea. For the big idea above, I would hope the teacher would teach about birds and about some other animal as well. When children are taught a big idea through one example only (only studying birds) they have a harder time generalizing their learning to other situations. So, in this example, students may learn that birds have a life cycle, but not understand that trees, frogs, dogs, and grass have a life cycle, too. To really make sure children have understood the big idea, children need to study several examples.

So, while we started with *The life cycle of birds*, we went through the thinking and refining process to come up with the big idea:

I want my students to understand that all living things have a life cycle.

Another example of a big idea in the area of animals:

I want my students to understand that a habitat is where plants and animals live and their needs are met.

Sometimes, you may be teaching several big ideas in the same lesson cycle:

I want my students to understand that living things go through a life cycle.

I want my students to understand that living things need oxygen, food, light and space in order to survive.

Example number 2:

Let's go through the thinking and refining process with another big idea:

I want my students to understand that there are different types of weather in different places.

Climate, rather than weather, is often part of state academic standards. When you are writing big ideas, it is very important to think through the vocabulary you use. If we want our students to use L1 and L2 vocabulary correctly, we need to use it correctly. Although weather and climate may be used interchangeably in informal, everyday speech, they really refer to two different things. Weather is what is going on today, and can change by the hour: It's raining; it's cold; it's sunny, etc. Climate refers to an overall

meteorological description, and is associated with place: arctic, temperate, tropical, etc. So, in looking at state standards, the big idea would become:
I want my students to understand that there are different types of climate in different places.

It fits into the sentence frame (I want my students to understand that...). Is it a detail or a big idea? Can we give an example?

For example, it is cold year round near the poles and warm year round near the equator.

We can give an example, so it is a big idea.

Because this is, I assume, a lesson for early elementary (K-2), it is probably important to teach about weather as well. So, we will want to include a second, related big idea:

I want my students to understand that each climate zone includes a variety of weather patterns.

And here is the "For example,..." of this big idea:

For example, while it is always warm near the equator, it may be sunny and warm or rainy and warm, depending on the season.

So this lesson would have two, related big ideas:

I want my students to understand that there are different types of climate in different places. I want my students to understand that each climate zone includes a variety of weather patterns.

I would hope the teacher would teach to these big ideas by looking at a variety of climate zones, and studying the weather in at least two of them.

Some other big ideas related to climate and weather:

I want my students to understand that human life is affected by climate and weather.

Example number 3

I want my students to understand that the earth rotates on an axis and also circles the sun.

While this can be found in many state standards and can complete the sentence prompt, it is difficult to come up with a, "For example..." So, this is a detail. Now, this is a very important detail, and one that can be hard for young students to grasp, so we have to ask the next question, "So what?"

We haven't really discussed the "So what?" question yet, so let's take a look at it. Yes, students need to know this detail, but why? And if you, and more importantly the students, don't know why they are learning it, it probably

won't be fully comprehended. I don't know where this teacher is planning on going with this lesson, but I could see two different big ideas, depending on the state standards and what the teacher was planning on teaching:

I want my students to understand that in our solar system, planets and moons move in two ways: rotation and revolution.

This would be the big idea if the lesson were focused on how things in space move. By studying all planets and moons in our solar system (or at least several, not just earth), students are brought to the deeper understanding that this is how most things in our solar system move. It is not a detail, but a big idea that is more widely applicable.

OR

I want my students to understand that the rotation, revolution, and tilt of the earth affect the earth in specific ways.

This would be the big idea to use if the standards were more focused on how life on earth is affected by the rotation and revolution of the earth. And, if you are going to discuss how the earth's revolution causes seasons, you need to teach students about the earth's tilt.

Conclusion

Thinking about, developing, and writing big ideas is a very reflective process. Not only do you need to be familiar with your state standards and/or your local curriculum, but you also have to really know what it is you want your children to understand. It is a process of looking at the standards and asking, "What is worth knowing?" It is much easier to create big ideas in a group, so I encourage you to work with your peers as you think about big ideas.

The following link developed by Understanding by Design provides multiple examples of big ideas

<http://www.ubdexchange.org/resources/UbdWebLinks.html> I do want to caution you, though, about using big ideas developed by other sources: you need to make sure you are really teaching to the big idea you choose.

Let me give you an example of what I mean. I was working with a teacher who was going to be teaching a unit on nutrition, specifically, the food pyramid. She found and decided to use the following big idea,

I want my students to understand that each nutritional category of food in the food pyramid provides our bodies with specific and necessary nutrients to help our bodies grow strong.

For example, dairy products provide calcium to help our bones grow strong.

This is a great big idea. It comes from state standards, it can complete the sentence prompt, and it's not a detail. But this is a summary of her lesson cycle, a cycle used by consultants at the Illinois Resource Center.

In the preview phase, she took the students through a TPR activity on foods in the dairy part of the food pyramid: milk, cheese, yogurt, etc. This prepared the students for the important vocabulary in the book she was going to be reading to them.

In the focused learning phase, she read the students a book on how a cow is milked, and then how that milk is turned into all sorts of milk products: milk, cheese, yogurt, etc.

In the application phase, she had children look through magazines and newspapers to cut out pictures of dairy foods, and had the students make poster collages.

Did the activities above help her students to understand that, *each nutritional category of food in the food pyramid provides our bodies with specific and necessary nutrients to help our bodies grow strong?*

If you really look at the lesson cycle, there is no mention of the nutritional importance of dairy products. What she was teaching the students was that, *Foods can be categorized by similar properties.*

She was teaching the students that foods can be categorized, NOT that foods provide specific nutritional benefits.

So, in summary, developing a big idea follows these steps:

- Look at state standards or at a local curriculum
- Complete the sentence, "I want my students to understand that..."
- Decide if it is a big idea or detail by writing, "For example,..."
- Ask, "So what?"
- Make sure to plan activities that teach to your big idea

Below are just a few more examples of big ideas:

I want my students to understand that...

The American colonists obtained social, economic, and religious freedom from England through a great deal of struggle. This is a great big idea as it is, but to make it even better, and to include the personal stories of the children, you might want to make it, *Throughout history, many people have only obtained social, economic and religious freedom through struggle.*

Geography affects the economic, social, and political development of communities.

People affect the environment and the environment affects people.

All materials can be classified as solids, liquids, or gases.

Everything that takes up space is matter.

All matter is made up of small particles.

Source: This article was written by Cheryl Urow, a consultant from the Illinois Resource Center, to support teachers in a graduate course that focuses on methods and materials for Dual Language classes. It was modified slightly for a more general audience by Jeanette Gordon.

Identifying, Teaching and Assessing Enduring Understandings

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Elementary and secondary teachers are always being told to teach the big ideas, yet, identifying, teaching and assessing what is most essential is not always obvious. Big ideas, now often known as topical or overarching understandings (Wiggins & McTighe, 1998) form the conceptual focus for curriculum mapping, theme development, instruction, and assessment. Understandings are broad generalizing statements, either principles which are always true or generalizations which tend to be true. Principles and generalizations state the relationships among key concepts (Marzano, Brandt, Hughes, Jones, Presseisen, Rankin & 1988). The following chart provides examples, contrasting them with common misconceptions. The concepts (critical vocabulary terms) are underlined, and the examples in the first section are topical understanding in a unit on sound. Examples of overarching understandings will then be provided.

Clarification of Understandings

WHAT ARE UNDERSTANDINGS?	INCORRECT EXAMPLE	CORRECT TOPICAL EXAMPLES
Understandings are not topics.	The Characteristics of Sound	Waves have similar characteristics: <u>amplitude</u> , <u>wavelength</u> , <u>frequency</u> and <u>velocity</u> .
Understandings are not details.	When people talk or sing, the vocal cords vibrate.	All sounds come from objects that <u>vibrate</u> .
Understandings are not objectives that demonstrate learning, rather statements of essential learning.	Students will explain the relationship between pitch and the frequency of vibrations.	The <u>frequency</u> of sound <u>vibrations</u> determines <u>pitch</u> , higher when faster, lower when slower.
Understandings are not in question form.	How fast does sound travel?	Sound travels at different speeds through different <u>mediums</u> . <u>Temperature</u> also influences the speed of sound.
Understandings are not sentence fragments, rather complete statements.	How people hear	The parts of the <u>ear</u> work together with the <u>brain</u> to enable people to hear sounds.
Understandings are not value judgments or stated from one cultural perspective.	Hearing people should respect the deaf.	<u>Perceptions</u> of the deaf have changed through time, but <u>prejudices</u> still exist.

Overarching Understandings

After students comprehend the understandings related to the unit topic, transfer of learning can be enhanced by helping students connect these new understandings to their prior learning and to preview later applications. Samples follow:

1. **Force causes motion.** (This is an understanding the students already have with visible objects as well as movement caused by unseen magnetic forces. Hence, their prior knowledge is connected to the movement of invisible sound waves.)
2. **Molecules are always in motion. The density and movement of molecules are different in different states of matter and are influenced by temperature.** (Students would have studied molecules and states of matter previously and can now transfer previous understanding to why sound travels at different speeds through different mediums.)
3. **Waves have similar characteristics: amplitude, wavelength, frequency and velocity.** (This understanding is also overarching since there are many kinds of waves.) **Back-and-forth motion creates compression or longitudinal waves.** (If students had studied compression waves while studying sound, it would be easier for them to understand the compression waves when studying AC electricity and to differentiate them from transverse waves when studying light.)

Differentiating Instruction

Learners in most classes have a wide range of literacy and language levels, diverse learning styles, interests and strengths, as well as markedly varied prior knowledge. Consequently, differentiated activities are typically needed during instruction. Focus on the essential understandings is the basis for differentiation and helps insure that all students get the key points of the lesson. Assessment is always tied to the same understandings, even when students do different tasks at different skill levels to demonstrate that understanding. The amount of knowledge students have about the topic will often differ depending on student variables such as prior knowledge, literacy and language levels. The language objectives will be differentiated for the same reasons. But all students will be held accountable for demonstrating the important understandings. This instructional focus helps learners recognize that the details they study in class are examples of broader, more encompassing understandings. Consequently, transfer of learning is enhanced and interdisciplinary connections are promoted. The following planning procedures and instructional suggestions may help you in identifying, teaching and assessing the essential understandings.

Procedures for identification of understandings, concepts and related objectives

1. When writing understandings, start with state and national standards. Some can be converted to a statement of understanding while for others the related understandings would need to be identified. There are multiple resources on-line that provide examples of understandings (also called big ideas). See links in the Curriculum Development section of www.netvouz.com/jgordon. Another source for understandings is text materials. It is helpful to look at the same topic in several texts, particularly across grade levels. A few publishers identify what is usually designated as big ideas. However, most tend to focus on the most important topical ideas, especially in social studies. Educators would then ask themselves, “These are examples of what broader understandings?” It is always possible to put, “**I learned that...**” before each statement of a big idea. That prompt or self-check can be very helpful as teachers state the understandings. Remember, however, that each understanding summarizes many examples. Consequently, “**for example**” can always follow. If examples are not possible, the statement is a detail, not a topical or overarching understanding.
2. After stating the understanding, educators need to identify the specific concepts that students must know if they are to understand the broader generalizing statements of the concept relationships. For example, if a student is to learn the understanding, “The frequency of sound vibrations determines pitch,” the student would need to learn the concepts of *sound*, *vibration*, *frequency* and *pitch*. However, it is important to recognize that just because students understand the meaning of each concept, doesn’t mean that they also understand the relationships among the concepts.
3. When students are learning a second language, prerequisite vocabulary needed to understand the concept must also be taught. In the preceding example, important language for *vibration* is the description “move back and forth”, for *pitch* the survival vocabulary “high and low” are required; and to understand and discuss *frequency*, students need the adjectives “faster and slower”.
4. For each understanding an instructor needs to identify both content and language objectives. It is also critical to identify the kind of thinking required to comprehend the understanding. Often a related graphic organizer can be used for both assessment and instruction.

The following content objectives demonstrate that a student comprehends the understanding, “The frequency of sound vibrations determines pitch, the faster the vibration the higher the pitch.”

Students will:

- Rank pictures of string instruments and representations of sound waves from the lowest pitch to the highest. (*Note that this task requires neither literacy nor language skills.*)
- Illustrate and explain why the size of a chamber affects pitch.
- Use a Venn diagram to compare and contrast high and low sounds.
- Illustrate compressions and rarefactions of sound waves.

Related language objectives are listed below. Students will:

- Use cause-effect sentence prompts to explain how the size of a chamber and the frequency of vibrations influence pitch. (Students with lower language skills could have either the cause-or the effect portion of the prompt completed.)
- Use comparative sentence prompts to compare and contrast high and low sounds.
- Cooperate with a team to contribute to a class-generated retelling of the class experiences that promoted comprehension of the understanding.
- Read the language experience retelling and select one of the options: match sentences with pictures, sequence sentence strips, complete a cloze, write as a dictation, or rewrite in your own words. (Note that each option provides progressively more complex follow-up tasks based on a common class retelling.)
- Write a paragraph explaining compressions and rarefactions of sound waves and the scientific measurement of frequency (advanced learners).

Suggestions for instruction and assessment:

1. Start with diverse modalities (experiments, visuals, realia, simulations, etc.) to preview the important concepts and the understandings. Teach the concepts first: *pitch*, *vibration* and *frequency*. Then teach the relationships among the concepts, the understanding. It is important for students get the point, to at least have introductory comprehension, prior to reading text-like material. To promote higher-order thinking, students will often construct their own understandings based on the experiences provided. They will share their own statements of understanding prior to reading and restate the ideas as their level of understanding deepens.

2. Read content examples of the understandings. Include materials with a range of readability levels that have quality visual support. Provide scaffolding for the literacy tasks.
3. Make the understandings very explicit as the lesson progresses. For example:
 - a. Display the understanding or write them together as a class based on the examples studied.
 - b. During instruction ask students often what they are learning. If they give you a detail, ask them, "That's a great example of what understanding?"
 - c. Assess understandings in multiple ways: Students may:
 - i. Demonstrate understanding through visuals.
 - ii. Match content details with related understandings.
 - iii. Complete connect-two sentence prompts about the concepts.
(*Pitch* and *frequency* are connected because _____.)
 - iv. Write the understanding that would be exemplified by several details.
 - v. Use the following sentence prompts: What did you learn? I learned that _____. For example: _____. How does this relate to what you already know? How can you use this in the future?

Additional Suggestions for ESL/bilingual and special education teachers:

- Collaborate with mainstream teachers to ensure that the understandings are being taught. If the teachers have not identified them, seek sources that help you identify the most important ideas.
- If you pull the students out of class, preview understandings that will be taught later in class.
- If students are consistently pulled out of the same class, or if you're teaching sheltered classes; teach the same understandings as those in the mainstream.
- Provide skill instruction in the context of the understandings.
- If assisting in a mainstream class, focus on making the understandings comprehensible to the English Language Learners through sheltering strategies and/or native language support.
- When incorporating ESL instruction into a transitional bilingual classroom, all students are introduced to the key concepts and understandings in English after they have studied and understood them in the native language. Of course, students preparing to transfer would also have related literacy tasks in English.

Conclusion

The use of understandings offers teachers an instructional focus that promotes differentiation for all students on what is most essential. Such comprehension not only helps students understand and retain what they are studying now, it promotes transfer to their own lives and future learning.

References:

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